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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,908	01/23/2004	Jason M. Benz	BUR920030121US1	1907
29154	7590	12/06/2006	EXAMINER	
<b>FREDERICK W. GIBB, III</b> GIBB INTELLECTUAL PROPERTY LAW FIRM, LLC 2568-A RIVA ROAD SUITE 304 ANNAPOLIS, MD 21401				RUGGLES, JOHN S
ART UNIT		PAPER NUMBER		
		1756		
DATE MAILED: 12/06/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/707,908	BENZ, JASON M.
	<b>Examiner</b>	<b>Art Unit</b>
	John Ruggles	1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 November 2006.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,3-6,8,10-13,15,17-19 and 21-23 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1,3-6,8,10-13,15,17-19 and 21-23 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 05 October 2006 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed on 11/2/06 in this application after the previous 8/14/06 final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous 8/14/06 Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/5/06 has now been entered.

### ***Response to Amendment***

In the currently entered previous submission filed on 10/5/06, claims 1, 8, 13, and 15 are currently amended, claims 2, 7, 9, 14, 16, and 20 are cancelled, claims 3-6, 10-12, and 17-19 remain as originally filed, and new claims 21-23 are currently added. Therefore, only claims 1, 3-6, 8, 10-13, 15, 17-19, and 21-23 are still pending and remain under consideration.

The previous drawings objections are withdrawn in view of the currently entered replacement drawings filed on 10/5/06, as stated below.

The previous objections to the abstract and the previous specifically exemplified objections to the specification numbered (1)-(3) are withdrawn in view of the currently entered replacement abstract and specification amendments. However, further examples of objections still remaining in the specification are listed below.

A new rejection under the first paragraph of 35 USC 112 is necessitated by the addition of new matter in currently added new claims 21-23, as set forth below.

The previous art rejections under 35 USC 102(b), 102(e), and 103(a) are re-written below along with new prior art rejections under 35 USC 103(a), as necessitated by Applicant's current claim amendments.

Applicant's arguments with respect to claims 1, 3-6, 8, 10-13, 15, 17-19, and 21-23 have been considered, but they are either unpersuasive or moot in view of the revised and new ground(s) of rejection set forth below, as necessitated by amendment.

*Drawings*

The previous drawings objections are withdrawn in view of Applicant's currently entered replacement drawings filed on 10/5/06.

*Specification*

The previous objections to the abstract and the previous specifically exemplified objections to the specification numbered (1)-(3) are withdrawn in view of the currently entered replacement abstract and specification amendments. However, further examples of objections still remaining in the specification are listed below.

(4) The title of the invention is not fully descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: --PROCESS FOR CREATING PHASE EDGE STRUCTURES IN A PHASE SHIFT MASK--.

35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms, which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification

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are: (5) in [0019] line 9, “100, 102 combined” should be changed to --100[[,] and 102 combined--; (6) in [0020] lines 19-20, “This additional patterning process enlarges the opening 114, 116 formed in the first patterning process” is confusing about whether the 116 portion of the opening is formed during either the *first* patterning process or the *additional* patterning process and must be clarified (e.g., to --This additional patterning process enlarges the opening 114[[,] ~~116~~ formed in the first patterning process to add the second region 116--, etc.); (7) in [0023] line 11, “the first region 804” is also unclear and should be changed to --the first region 804 , in item 804--, if this best represents Applicant’s original intention regarding the description of the last box 804 in Figure 8; and (8) in [0025] lines 2-6, the text “in the original method, the second level lithography process had to land on the opaque region between the two clear openings (112). However, in the second process, the second lithography process only has to hit the large opening (which provides more room for error)” is unclear about the difference between the prior art (as illustrated by instant prior art Figures 1A to 3B) and the instant invention (as illustrated by instant Figures 4A to 5B), so it is suggested that this text be changed to --in the original method (illustrated by prior art Figures 1A to 3B), the second level lithography process had to land on the opaque region (106) between the two clear openings (112 100 and 102, as shown in prior art Figure 2B). However, in the second process of the invention (illustrated by Figures 4A to 5B), the second lithography process only has to hit the large opening (114 and 116 as shown in Figure 5B, which provides more room for error)--. Note that due to the number of errors, those listed here are merely examples of the corrections needed and do not represent an exhaustive list thereof.

Appropriate correction is required. An amendment filed making all appropriate corrections must be accompanied by a statement that the amendment contains no new matter and also by a brief description specifically pointing out which portion of the original specification provides support for each of these corrections.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 21-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contain subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. These newly filed claims recite that in the independent claims from which they depend (instant claim 21 depends from instant claim 1, instant claim 22 depends from instant claim 8, and instant claim 23 depends from instant claim 23), the etching step and the additional patterning step both attack the substrate, which is not found to be supported in the specification as originally filed. Since Applicant has not specified any basis at all for supporting or enabling these newly added claim recitations, these additional recitations are believed to constitute new matter that must be cancelled from the claims in response to this Office action.

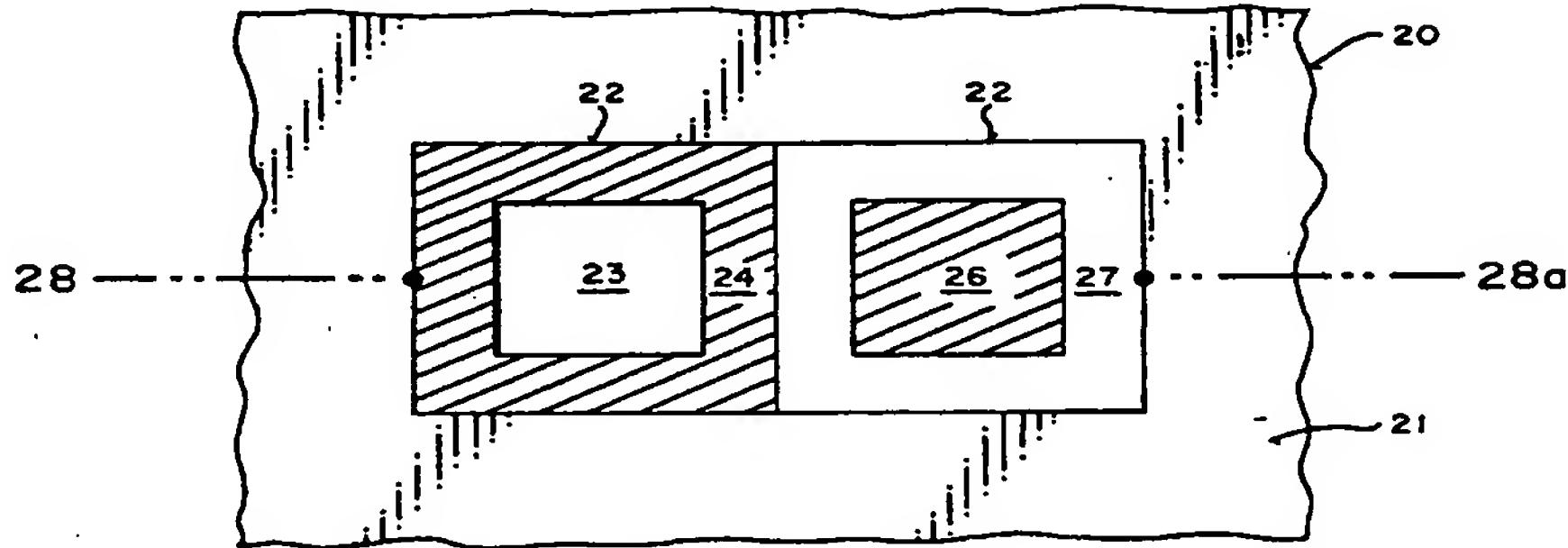
***Claim Rejections - 35 USC § 102/103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3-6, 15, and 17-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Dao et al. (US 5,302,477).

Dao et al. Figure 4A is again reproduced below for Applicant's convenience.

**FIG — 4A**



Dao et al. teach an inverted phase-shifted reticle or mask (PSM) having adjacent inverted phase features with PS rims or phase edges between  $0^\circ$  and  $180^\circ$  phase features; and methods of fabricating the PSM (title, abstract). The methods of fabricating the PSM include performing first patterning or etching of an opaque chrome (Cr) mask layer 21 (*instant claims 4 and 18*) formed on a transparent quartz substrate 20 (as shown in Figure 7, *instant claim 5*) to expose a first region of the transparent substrate 20, which is etched to form a PS region 53 first opening (Figure 8, which also corresponds to 24 in Figures 10 and 4A). This is followed by performing additional second patterning or etching of the opaque Cr layer to expose an adjacent second region 27 of the transparent substrate to enlarge the first opening formed in the first region 24 over a continuous area of the transparent quartz substrate (as shown above in Figure 4A, which clearly depicts Figure 10 without any Cr at all between the first region 24 and the adjacent second region 27, col. 8 line 46 to col. 9 line 13, *instant claims 3 and 17*). In the PSM shown by Figure 4A, a first (etched PS) rectangular region 24 is directly adjacent to a second (unetched

non-PS) rectangular region 27, in which both the first rectangular region 24 and the second rectangular region 27 are similarly shaped and sized (col. 5 line 67 to col. 8 line 3, *instant claims 1, 6, 15, and 19*).

Claims 1, 3-6, 15, and 17-19 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Schroeder et al. (US 2003/0027057).

Schroeder et al. teach a phase shift mask 400 (PSM) and method of manufacturing the PSM (abstract). Figure 6A shows a PSM 400 having a transparent quartz substrate 402 (*instant claim 5*) with a first etched region 458 or 454 for a 180° phase (shift, PS) feature and an adjacent second unetched region 460 or 456 for a 0° phase (non-PS) feature next to an overlying patterned opaque chrome (Cr) layer 404 (paragraphs [0041]-[0047]). In the method of manufacturing the PSM, the opaque layer is preferably formed on the transparent substrate and patterned before etching of the underlying transparent substrate. Alternatively, the opaque layer can be patterned after etching the transparent substrate [0043]. The method for making the PSM in Figure 6A would be expected to involve first patterning of an opening in the opaque layer, etching of the underlying transparent substrate at a first region 458 or 454 through the opening in the opaque Cr mask layer (*instant claims 4 and 18*), and additional patterning of the opaque layer to enlarge the opening that forms a second adjacent (non-PS) region 460 or 456, both PS and non-PS regions are formed over a continuous area of the transparent quartz substrate (*instant claims 3 and 17*).

Figure 6B illustrates a top view of the PSM in Figure 6A that shows parallel lines for phase edge 452 between PS 458 and non-PS 460, as well as the adjacent edge of the patterned opaque Cr layer 404. These lines can extend only partially across the length of the mask 400 [0048], which is consistent with a rectangular first region 458 and an adjacent rectangular second region 460

having a similar shape. Even though the apparent width of non-PS region 460 in Figures 6A and 6B appears to be narrower than the adjacent PS region 458, non-PS region 456 on the other side of adjacent PS region 458 appears to have the same or similar width or size as the adjacent PS region 458. Also, PS region 454 appears to have the same or similar width or size as non-PS region 460. Therefore, this process is inherently capable of producing adjacent PS and non-PS regions that have similar shape and size (*instant claims 1, 6, 15, and 19*).

Claims 1, 3-6, 15, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Dao et al. (US 5,302,477) or Schroeder et al. (US 2003/0027057) in view of either Levenson (US 6,251,549), Rolfson (US 6,395,432), or Applicant's admitted prior art.

While teaching other aspects of the instant claims, neither Dao et al. nor Schroeder et al. specifically teach a method of forming a PSM having adjacent first and second similarly shaped and sized rectangular 0° non-PS and 180° PS features or regions *in the particular configuration shown by instant Figure 5A or instant Figure 6A* (as specific examples of *instant claims 1, 3-6, 15, and 17-19*).

However, the particular configuration shown by instant Figure 5A or instant Figure 6A for a PSM having book-matched adjacent first and second similarly shaped and sized rectangular 0° non-PS and 180° PS features or regions is well known in the art of making PSMs, as exemplified by either Levenson (Figures 9-11, col. 6 lines 53-61), Rolfson (Figure 12, col. 6 lines 28-36), or even Applicant's admitted prior art (as shown in instant prior art Figures 1A to 3B, which Applicant admits at [0020] lines 1-5 to have the same PSM structure as shown by instant Figures 4A to 6B). So, it would have been obvious to one of ordinary skill in the art at the time of the invention in the methods of forming PSMs having adjacent first and second PS

regions taught by either Dao et al. or Schroeder et al. to form these adjacent first and second PS regions in a book-matched configuration of similarly shaped and sized rectangular 0° non-PS and 180° PS features or regions (as taught by either Levenson, Rolfson, or Applicant's admitted prior art), just as exemplified by instant Figures 5A or 6A, in order to achieve a corresponding desired imaged pattern through such a PSM (*instant claims 1, 3-6, 15, and 17-19*).

Claims 8 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Dao et al. (US 5,302,477) or Schroeder et al. (US 2003/0027057) in view of Tzu et al. (US 5,888,678).

While teaching other aspects of the instant claims, neither Dao et al. nor Schroeder et al. specifically teach forming additional third regions that are devoid of PS features (*instant claims 8 and 10-13*).

Tzu et al. teach a PSM having separate PS mask patterns and non-PS binary mask patterns on the same mask substrate, as well as a method of forming this PSM (title, abstract). Formation of the PS mask patterns and binary mask patterns on the same transparent mask substrate increases throughput and decreases cost in the fabrication of integrated circuit wafers (abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention in the methods of forming PSMs having adjacent rectangular first and second PS regions that are similarly shaped and sized (as taught by either Dao et al. or Schroeder et al.) to form additional third binary mask pattern regions that are devoid of PS features on the same transparent mask substrate, in order to increase throughput and decrease cost in the fabrication of integrated circuit wafers (as taught by Tzu et al., *instant claims 8 and 10-13*).

Claims 8 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Dao et al. (US 5,302,477) or Schroeder et al. (US 2003/0027057) in view of Tzu et al. (US 5,888,678), and further in view of either Levenson (US 6,251,549), Rolfson (US 6,395,432), or Applicant's admitted prior art.

While teaching other aspects of the instant claims, none of Dao et al., Schroeder et al., nor Tzu et al. specifically teach a method of forming a PSM having adjacent first and second similarly shaped and sized rectangular 0° non-PS and 180° PS features or regions *in the particular configuration shown by instant Figure 5A or instant Figure 6A* (as specific examples of *instant claims 8 and 10-13*).

However, the particular configuration shown by instant Figure 5A or instant Figure 6A for a PSM having book-matched adjacent first and second similarly shaped and sized rectangular 0° non-PS and 180° PS features or regions is well known in the art of making PSMs (exemplified by either Levenson, Rolfson, or Applicant's admitted prior art as discussed above). So, it would have been obvious to one of ordinary skill in the art at the time of the invention in the methods of forming PSMs having adjacent first and second PS regions and separate additional third binary mask pattern regions that are devoid of PS features on the same transparent mask substrate (as taught by either Dao et al. or Schroeder et al. in combination with Tzu et al.) to form the adjacent first and second PS regions in a book-matched configuration of similarly shaped and sized rectangular 0° non-PS and 180° PS features or regions (as taught by either Levenson, Rolfson, or Applicant's admitted prior art), just as exemplified by instant Figures 5A or 6A, in order to achieve a corresponding desired imaged pattern through such a PSM (*instant claims 8 and 10-13*).

Claims 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Dao et al. (US 5,302,477) or Schroeder et al. (US 2003/0027057) in view of either Levenson (US 6,251,549), Rolfson (US 6,395,432), or Applicant's admitted prior art, and further in view of Sandstrom (US 2002/0125443).

While teaching other aspects of the instant claims, neither Dao et al., Schroeder et al., Levenson, Rolfson, nor Applicant's admitted prior art specifically teach a method of forming a PSM in which the etching of a first PS region and the subsequent additional patterning of an adjacent second non-PS region both attack the substrate of the PSM (*instant claims 21 and 23*).

Sandstrom teaches methods of making PSMs (title, abstract). Figure 3D shows a latter process step for making a PSM having a top non-transmitting/opaque region 302 (of one or more layers, on the left), which is directly adjacent to a first PS window/region 327 (etched into the substrate 100) that is deeper than another directly adjacent subsequently additionally patterned (etched) second non-PS window/region 325 (on the right) [0075]. The patterned non-transmissive/opaque material is typically Cr [0065]. Thus, the first etching step to pattern the PS region 327 and the subsequent additional patterning by etching to form the second region 325 both attack the substrate of the PSM (*instant claims 21 and 23*). Further etching during the additional patterning of the PSM substrate is useful for improving uniformity [0074].

It would have been obvious to one of ordinary skill in the art at the time of the invention in the method of forming a PSM having a first etched PS region and an adjacent second additionally patterned transmissive region enlarging a patterned opening in an opaque layer, such that the adjacent first and second regions are in a book-matched configuration of similarly shaped and sized rectangular PS and non-PS regions (as taught by either Dao et al. or Schroeder

et al. and either Levenson, Rolfson, or Applicant's admitted prior art, which are discussed above) to have further attacked or etched the PSM substrate during the additional patterning step, because this further etching during additional patterning of the PSM substrate is useful for improving uniformity (as taught by Sandstrom, *instant claims 21 and 23*).

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Dao et al. (US 5,302,477) or Schroeder et al. (US 2003/0027057) in view of Tzu et al. (US 5,888,678), further in view of either Levenson (US 6,251,549), Rolfson (US 6,395,432), or Applicant's admitted prior art, and further in view of Sandstrom (US 2002/0125443).

The teachings of Sandstrom are discussed above.

It would have been obvious to one of ordinary skill in the art at the time of the invention in the method of forming a PSM having first etched PS regions and an adjacent second additionally patterned transmissive regions enlarging patterned openings in an opaque layer, such that the adjacent first and second regions are in book-matched configurations of similarly shaped and sized rectangular PS and non-PS regions (as taught by either Dao et al. or Schroeder et al. in combination with Tzu et al. and either Levenson, Rolfson, or Applicant's admitted prior art, which are discussed above) to have further attacked or etched the PSM substrate during the additional patterning step, because this further etching during additional patterning of the PSM substrate is useful for improving uniformity (as taught by Sandstrom, *instant claims 21 and 23*).

#### ***Response to Arguments***

Applicant's arguments with respect to claims 1, 3-6, 8, 10-13, 15, 17-19, and 21-23 have been considered, but they are either unpersuasive or moot in view of the revised and new ground(s) of rejection, as necessitated by amendment.

Throughout the arguments on pages 10-22 of 24 in the currently entered 10/5/06 amendment, Applicant again seems to be confused regarding the order of process steps taught by Dao et al. for forming a PSM having a first PS region 24 (shown as 53 in Figure 8) and a subsequently formed second non-PS region 27 directly adjacent to 24 (as shown in Figure 4A), in which both 24 and 27 are rectangular regions with similar shape and size to each other. The teachings of Dao et al. are again repeated above, but this time only including a copied image of corresponding Figure 4A from Dao et al. for Applicant's convenience. *Applicant is again specifically called upon to acknowledge that in Figure 4A of Dao et al. there is no Cr covered region 21 at all between the first earlier formed PS region 24 opening in the Cr layer and the second later formed non-PS region 27 expanding the Cr layer opening* (so that 24 and 27 are directly adjacent to each other without any separation in between them, as clearly illustrated in Figure 4A).

On page 11, Applicant asserts that “the removal of the patterning layer 61 (to form the second region) in Dao” does not enlarge the opening in the Cr layer previously formed when the PS region 24 is etched. However in Dao et al., the patterning layer 61 is not removed until after etching to remove another portion of the Cr layer 21 to expand the previous opening 24 at region 27, which is directly adjacent to 24 (as shown in Figure 4A).

Also on page 11, Applicant contends: “Schroeder **merely discloses** that the substrate is patterned and etched to produce phase shift regions having a predetermined depth in the top surface of the substrate” (emphasis added). Applicant fails to show any specific support at all for this contention. In fact, Applicant’s contention is clearly inconsistent with all the teachings of Schroeder et al., the most germane of which were previously stated and are again repeated above.

In response to the argument on pages 14-16 regarding Figures 6A and 6B taught by Schroeder et al., the mere apparent difference in width or size between PS region 458 and non-PS region 460 does not exclude this reference from consideration. This is particularly true because non-PS region 456 on the other side of adjacent PS region 458 appears to have the same or similar width or size as the adjacent PS region 458. Also, PS region 454 appears to have the same or similar width or size as non-PS region 460. Therefore, the process of making a PSM taught by Schroeder et al. is shown to be inherently capable of producing adjacent PS and non-PS regions that have similar shape and size. Applicant cannot distinguish the instant invention over this reference merely on the basis of apparent dimensions in these prior art figures, which are not necessarily drawn to scale, because Applicant has not shown any particular portion of the corresponding prior art description that limits these teachings to have particular relative dimensions. In fact, the configuration of the PSM shown by instant Figure 6B is admitted by Applicant at [0020] to have the same structure as the PSM shown by instant prior art Figure 3B.

In response to Applicant's arguments on pages 16-18 that neither of the alternative secondary references (e.g., either Levenson or Rolfson, etc.) show all the same method steps already covered by one of the primary references (e.g., either Dao et al. or Schroeder et al., etc.), the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). The reason for combining these references was previously stated and is again repeated above. In fact, Applicant even admits that it was

already known in the art at the time of the invention to create an adjoining PS region (102) and a non-PS region (100) having book-matched similar shapes and sizes as an expanded opening in a patterned Cr layer 112 on a PSM substrate 110 (as shown by instant prior art Figures 3A and 3B).

In response to Applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). For example, on pages 19-22, Applicant points out ways in which Tzu alone differs from the instant invention, but fails to recognize the reason why Tzu was cited by the Examiner in combination with one or more other reference(s). Both this reason and the supporting motivation for combining this reference were previously stated and are again repeated above.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Ruggles whose telephone number is 571-272-1390. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jsr



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